OPERATIONAL CAPABILITIES ASSESSMENT

Final Report KAI-37F

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A series of analyses were performed for the Deputy Chief of Naval Operations (Naval Warfare), OP-07, bearing on the impact of potential force structure and program changes on Navy operational capabilities and concepts. The specific tasks were determined by the Director, Force Level Requirements and Assessment Division, OP-70, based in part on current needs within the OP-07 organization, and in part on recommendations from ~~KAI~~ (i.e. contractor). Some were quick-reaction analyses designed to respond to immediate OP-07 needs; others were more complete studies intended to define program-related issues, to assemble the relevant data available, and to provide quantitatively based evaluation. The following topics were addressed:

- Adequacy of threat weapons inventory;
- Role of surface effects shipps ~~(SES)~~ in the force structure;
- Force structure for the maritime strategy;
- Force structure requirements for low intensity conflict; (LIC)

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TABLE OF CONTENTS

INTRODUCTION

During the period of 1 January - 31 December 1988, Kapos Associates Inc. (KAI) performed a series of analyses for the Deputy Chief of Naval Operations (Naval Warfare), OP-07, bearing on the impact of potential force structure and program changes on Navy operational capabilities and concepts. This work was carried out under contract No. N00014-88-C-0160, issued by the Office of Naval Research.

The specific tasks were determined by the Director, Force Level Requirements and Assessment Division, OP-70, based in part on current needs within the OP-07 organization, and in part on recommendations from KAI. A total of 7 tasks were undertaken. Some were quick-reaction analyses designed to respond to immediate OP-07 needs; others were more complete studies intended to define program-related issues, to assemble the relevant data available, and to provide quantitatively based evaluation.

The 7 tasks addressed the following topics. The list is not sequential, as two or more tasks were commonly being worked on at any one time.

- Adequacy of threat weapons inventory
- Role of surface effects ships (SES) in the force structure
- Force structure for the maritime strategy
- Force structure requirements for low intensity conflict (LIC)
- Methodology for future force evaluation (FFE)
- Fleet Command Center system prototyping requirements
- Monitoring and evaluation of OPNAV Team CHARLIE (C^3I Master Plan) activities

Extensive discussions and liaison were conducted in connection with each of these tasks not only with the cognizant officers in OP-07, but with other offices in OPNAV and other organizations in the Navy. The work products from the tasks took the form of reports, oral briefings, and inputs into OP-07 staff papers. The scope of the individual tasks is summarized in the next section.

TASK SUMMARIES

THREAT WEAPONS INVENTORY

The purpose of this task was to investigate the near-term adequacy of the inventory of various types of Navy threat weapons (i.e., weapons intended for use against targets that are not readily replaceable or repairable within the time covered by a single campaign) to meet the requirements of a maximum or near-maximum theater-level projection of power by a multiple-carrier battle force (CVBF).

The Navy's Non-Nuclear Ordnance Requirements (NNOR) documents provide ordnance inventory objectives for planning and programming that comprise, by virtue of the conservative assumptions on which they are based, upper bounds for threat weapons inventory requirements. Other sources suggest that the inventory levels required to counter the expected threat, assuming that tactical malpositioning (within the force) is minimal, are not as high as the NNOR planning objectives or, in most cases, even the programming objectives. These sources include the LANTFLT Tactical Command Readiness Program (TCRP) war games (Cycles 32, 36 and 37), and a PACFLT Operational Logistics Assessment based on the OPNAV Draft Primary Operational Logistics Planning Factor.

A range of operationally realistic requirements was defined for each type of threat weapon, and the adequacy of current and programmed inventories assessed against that range to identify those weapon types for which any shortfalls are modest enough to correct by tactical measures (e.g., reduction of operational malpositioning, substitution of more plentiful weapons) and those for which major shortfalls beyond the reach of such measures will persist. The latter might be candidates for an increased and more sharply focused RDT&E investment in less expensive threat weapons that will permit buys on a scale that will provide a higher assurance of adequate inventories.

ROLE OF SURFACE EFFECTS SHIPS (SES)

Despite increasing doubt that the required members of surface combatants of roughly the present capability and configuration can be afforded under foreseeable budget levels, neither of the Revolution at Sea studies -- which comprise the key examinations in recent years of the Navy's surface combatant force structure -- looked at ways of radically reducing costs, while maintaining canonical capabilities corresponding to the major classes of units in the current force. The Surface Combatant Force Requirements Study (SCFRS) dealt essentially in those canonical capabilities, while the Ship Operational Characteristics Study (SOCS) examined a wide range of characteristics changes that might somewhat reduce costs and/or increase capability, but deliberately excluded unconventional hull forms from consideration.

The potential of unconventional hull forms to permit maintaining desired surface combat force levels under increasingly stringent budgetary constraints thus required examination. At the same time, an emerging Joint Chiefs of Staff requirement for a high-speed logistics SES for strategic mobility necessitated careful consideration of the potential role of that specific technology in the future force structure. The impact of that requirement and the Navy's options for responding to it would clearly depend on whether there is also a role for the SES in the surface combatant force structure.

The purpose of this task was to provide a preliminary assessment of the potential role of the SES as a surface combatant. This assessment was made in terms of operational characteristics related to hull form (e.g., speed and endurance, flexibility, volume efficiency and weight, and survivability), affordability and cost, and producibility and technical risk.

FORCE STRUCTURE FOR THE MARITIME STRATEGY

The Navy's concept for the employment of its forces in support of the national military strategy is embodied in the Maritime Strategy. The Maritime Strategy, as it has evolved over the past several years, has been predicated on the existing Navy force structure. That force structure -- including its basing and deployment elements, as well as the number and mix of units -- is bound to change in a variety of ways because of budgetary and geopolitical factors. The Navy will clearly not be able to buy all the ships and aircraft it had intended to; it may not be able to operate them in the ways it had intended to.

Most individual force structure changes can readily be assessed as not being critical to the executability of the existing Maritime Strategy. Cumulatively, they must eventually reach the point where the Navy can no longer execute that strategy, or even accomplish what is expected of it under the national military strategy. It then becomes necessary to devise a new strategy to attain the existing goods or, if that is not feasible, to set new goals -- or to preserve the force structure so that neither of those measures becomes necessary.

There has been no systematic analytical effort to determine the point in the cumulative alteration of the Navy's force structure at which the existing force structure can no longer be executed. The purpose of this task was to define a methodology for such an analysis, and to make a limited application of that methodology to assess its suitablility for dealing with that elusive problem. A tentative methodology was developed, but its application was not carried completely through because of the need to divert effort from this task to another of higher priority to OP-07 (monitoring and evaluation of Team CHARLIE).

LOW INTENSITY CONFLICT

The existing Navy force structure has been developed primarily to provide an effective counter to the threat posed to United States maritime interests worldwide by the Soviet Union. Yet, irrespective of whether, as the current perceptions of many would have it, combat with the forces of the Soviet Union becoming less likely, most of the crisis and combat situations in which the Navy's forces have recently been involved have been in connection with Third World confrontations of the type and scale generally referred to as Low Intensity Conflict (LIC). The role of naval forces, the threats to them, and the environment in which they must operate differ in some crucial respects between LIC and the primary mission for which the present force structure was devised, and it is reasonable to expect that this force structure may require some modification to meet the requirements imposed by LIC.

The purpose of this task was to define LIC requirements for naval forces in a systematic way, to make a preliminary -- and largely qualitative -- assessment of the adequacy of the present force structure for those requirements, and to identify the areas in which specific shortfalls exist. This was done by identifying the regions of the world in which LIC requiring naval intervention might occur, defining the missions the naval forces might have to carry out and the threats and environmental stresses that might apply. The capability of current force elements and systems to perform their missions under those circumstances was then assessed, and characterized in terms of the requirements being fully satisfied, substantially satisfied (subject to some identifiable shortfalls), or not satisfied without significant new capabilities being provided.

FUTURE FORCE EVALUATION

The system of Top Level Warfighting Requirements (TLWR) provides a framework of functional and performance requirements within which alternative force structures -- or architectures -- can be proposed that will differ with respect to such factors as fit to specific anticipated mission environments, robustness under threat uncertainties, programmatic impact, and the stability of performance capabilities through force transitions over time. OP-07 required an evaluation methodology to assess these alternative future force structures.

Assistance was provided to the OP-07 staff in developing an appropriate evaluative framework and procedure, as well as representation of the concept. This was presented by OP-07 to the Navy CINCs' Conference as the Future Force Evaluation methodology. It was endorsed by the Conference.

FLEET COMMAND CENTER SYSTEM PROTOTYPING

The design, following the 1986 OP-094 Blue Ribbon Panel's review of the OSIS Baseline Upgrade (OBU) program, to cancel the Operations Support Group (OSG) component of that program was followed by a heavy increase in the emphasis on the command support system prototyping efforts under way at both the CINCLANTFLT and CINCPACFLT headquarters. These efforts, with their focus on tactical information flow (JOTS) and decision aiding (OSGP+, FCCBMP), respectively, provided the only avenue in the foreseeable future to need-responsive and affordable command support in the operational (as opposed to surveillance or intelligence) domain for the Fleet Commanders.

In 1987, it was decided to combine the various prototyping efforts into an FY 90 new-start program, to be called the Operations Support System (OSS), that would follow an evolutionary acquisition strategy. An operational requirement was developed for OSS, and an acquisition strategy was defined. In the process, however, a number of issues bearing on both near-term and longer-term operational capabilities in fleet-level command and control were substantially overlooked.

These issues included the best course for a continuing prototyping effort to preclude an effective loss of operational capability until the new-start program could provide fresh momentum, the use of FY 87-89 funds originally earmarked for OBU to support the prototyping effort, the appropriate relationship between the Navy's OSS acquisition program and the DARPA exploratory development effort on the Battle Management Program (BMP) that was to provide a major element for OSS, and the definition of a theatre C^2 architectural for the maritime theaters that would both make the best use of OSS technology and ensure that the Navy could avoid additional costs to fit its development into such an architecture.

The purpose of this task was to provide continuing research, analysis and advice on those issues. Frequent briefings were provided for OP-70 and for the Vice Chief of Naval Operations.

TEAM CHARLIE SUPPORT

Team CHARLIE was established in mid-1988 as the OPNAV organization charged with developing a Navy C^3I master plan. The Steering Group was co-chaired by OP-07B, OP-094B and OP-092. Beyond that, Team CHARLIE was organized into 7 working groups to produce the various sections of that master plan in accordance with an outline that was laid out in the early planning process.

KAI was tasked by OP-07 to monitor Team CHARLIE activities, and to evaluate the approach and progress being made in support of OP-07B's role as principal co-chairman. The broad approach was evaluated as a reasonable one, given the objectives set out for Team CHARLIE, but over the first several months it became evident that the progress being made was inconsistent with those objectives. Regular briefings on the assessment were provided for OP-07B and OP-70 throughout the second half of the year.